

REMARKS

Claim 1 has been amended to incorporate a feature of Claim 32. Claim 15 has been amended to incorporate a feature of Claim 33. The features of Claims 32 and 33 which have been incorporated into Claims 1 and 15 have been deleted. Because the amendments to Claims 1 and 15 do not add new matter, do not raise any new issues, and place the application in better form for appeal, entry thereof is respectfully requested. Claims 1-3, 5-29 and 31-33 are pending. Claims 13-15, 24-29 and 31 have been withdrawn from consideration. Reconsideration and allowance are respectfully requested in view of the following remarks.

Examiner Interview

As an initial matter, Applicant's representative would like to thank Examiner Dhingra for the courtesies extended during the personal interview conducted on April 10, 2008. The substance of the interview, incorporated in the discussion below, included a discussion of Examiner Dhingra's interpretation of Claims 1 and 33 and the applied references of Yatsuda et al. (U.S. Patent No. 6,488,863), Chiang et al. (U.S. Patent No. 6,800,173) and Ramanan et al. (U.S. Patent No. 6,529,686).

Claim Rejections - 35 U.S.C. § 103(a)**A. Claims 1, 2, 10, 12, 15, 16, 21 and 23**

Claims 1, 2, 10, 12, 15, 16, 21 and 23 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda et al. (U.S. Patent No. 6,488,863) ("Yatsuda") in view of Chiang et al. (U.S. Patent No. 6,800,173) ("Chiang") and Ramanan et al. (U.S. Patent No. 6,529,686) ("Ramanan").

Applicant respectfully notes that features of Claims 32 and 33 have been incorporated into Claims 1 and 15. In rejecting Claims 32 and 33, the Official Action contends that Gaylord et al. (U.S. Patent No. 5,849,076) ("Gaylord") discloses the features of Claims 32 and 33 (Official Action at page 15, lines 14-21). Applicant respectfully traverses this rejection, because the applied references do not disclose or suggest all claim features.

1. **No Disclosure of Heating and Cooling of the Heat Transfer Member at a Rate of From About 0.25-2°C/sec With a Circulated Liquid**

The Official Action acknowledges that Yatsuda does not disclose a controller operable to control the volumetric flow rate and/or the temperature of the liquid circulated through the at least one flow passage, so as to control heating and cooling of the heat transfer member at a rate of from about 0.25-2°C/sec (Official Action at page 4, lines 18-20). However, the Official Action cites Chiang for the disclosure of a controller operable to control the volumetric flow rate and/or the temperature of the liquid circulated through the at least one flow passage (Official Action at page 5, lines 3-8) and cites Ramanan for the disclosure of a controller for heating and cooling at a rate of from about 0.25-2°C/sec (Official Action at page 6, lines 5-7). Applicant respectfully disagrees.

a. **Chiang Provides No Disclosure of Heating and Cooling Rates**

Chiang discloses control system 330 for controlling the temperature of pedestal 4 by regulating temperature and/or flow of fluid in coolant channels 78 (column 22, lines 22-28; FIG. 28). However, Chiang provides no disclosure of heating and cooling rates, much less heat and cooling at a rate of from about 0.25-2°C/sec.

b. **The Heating and Cooling Rate of Ramanan Is Achieved With a Resistive Heater Coupled With a Higher Thermal Mass Cooling Member**

Ramanan discloses a heating member capable of achieving heating or chilling rates of 1°C/second to 50°C/second (column 4, lines 45-52). However, Ramanan discloses a backplate **20**, which holds semiconductor device **12**, and includes "one or more heating elements ... preferably in the form of resistive heating element[s]" (emphasis added) (column 13, lines 43-45). To cool backplate **20**, it is placed in thermal contact with cooling member **26** which serves as a "thermally massive heat sink" (column 13, lines 59-65) with "a liquid cooling medium" (column 14, lines 18-21) flowing through cooling channels **28** (column 13, line 66 to column 14, line 6; FIG. 1A). Thus, the heating or chilling rates of 1°C/second to 50°C/second can be achieved by resistively heating backplate **20** or contacting it with "thermally massive heat sink" cooling member **26**. However, as discussed during the interview, there is no disclosure or suggestion that heating and cooling at a rate of from about 0.25-2°C/sec can be achieved by circulating a liquid to heat and cool the heat transfer member.

2. **The Official Action Has Not Addressed the Claim Feature of Heating is Performed Solely by the Heat Transfer Member**

The Official Action cites Gaylord for the alleged disclosure of a "controller ... able to control the temperature of the coolant to first and second temperatures" (Official Action at page 15, lines 18-20). However, the Official Action has neither addressed the claim feature that "heating is performed solely by the heat transfer member" in Claims 32 and 33 nor provided any specific citation in Gaylord. Thus, contrary to Federal Circuit precedent, the Official Action "assert[s] an explicit or

implicit teaching or suggestion in the prior art," but without "indicat[ing] where such a teaching or suggestion appears in the reference." *In re Rijckaert*, 9 F.3d 1531, 1533, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (emphasis added).

3. No Disclosure of Heating Solely by the Heat Transfer Member

As discussed below, Yatsuda, Chiang, Ramanan and Gaylord do not disclose or suggest the combination of features recited in Claims 1 and 15, including "wherein heating is performed solely by the heat transfer member" (emphasis added).

a. Yatsuda Provides No Disclosure of Heating Performed Solely by the Heat Transfer Member

Yatsuda discloses a "cooling jacket **34** ... formed in the worktable **18**, so that the wafer **W** is kept at a predetermined temperature by causing a coolant to flow in the jacket **34**" (column 3, lines 53-55; FIG. 1). However, Yatsuda provides no disclosure that worktable **18** is heated solely by flowing a liquid through cooling jacket **34**.

b. The Process Chamber of Chiang Is Resistively Heated

Chiang discloses process chamber **12** for atomic layer deposition, including electrostatic chuck **6** (supporting wafer **8** and above pedestal **4** in FIG. 28) which is heated directly with resistive heater **72** (column 22, lines 22-28). However, Chiang provides no disclosure or suggestion that pedestal **4** is heating solely by a flowing a liquid through coolant channels **78**.

c. The Backplate of Ramanan Is Resistively Heated

Backplate **20** of Ramanan, which holds semiconductor device **12**, includes "one or more heating elements ... preferably in the form of resistive heating element[s]" (emphasis added) (column 13, lines 43-45). To cool backplate **20**, it is placed in thermal contact with cooling member **26** (column 13, lines 64-66), which is

chilled with "a liquid cooling medium" (column 14, lines 18-21). As such, Ramanan provides no disclosure that backplate **20** is heated solely by flowing a liquid.

d. The Barrel Reactor of Gaylord Is Heated With Heat Lamps

Gaylord discloses a chemical vapor deposition barrel reactor (column 4, lines 21-23) with reaction chamber vessel **12** and radiant heat lamps **26** (column 4, lines 35-40). Gaylord further discloses that heat lamps **26** provide a source of energy to heat reactor components, including gas ring **18** and seal plate **37** (column 7, lines 7-10). Cooling system **74** of Gaylord cools gas ring **18** and seal plate **37** (column 5, lines 49-52) to a first temperature when heat lamps **26** are active (column 7, lines 1-4) and a second temperature when heat lamps **26** are de-energized (column 7, lines 19-22). However, Gaylord provides no disclosure or suggestion of heating solely by flowing a liquid.

Because a *prima facie* case of obviousness has not been established, Applicant respectfully requests withdrawal of the rejection of Claims 1 and 15 under 35 U.S.C. §103(a). Dependent Claims 2, 10, 12, 16, 21 and 23 are also patentable over the applied combination of references at least for the same reasons as those discussed above regarding Claims 1 and 15.

B. Claim 3

Claim 3 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Kadotani et al. (U.S. Patent Appl. Pub. No. 2004/0163601) ("Kadotani I").

However, Claim 3 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. As such, the rejection is moot.

C. Claim 5

Claim 5 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Kadotani et al. (U.S. Patent Appl. Pub. No. 2001/0018828) ("Kadotani II").

However, Claim 5 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. As such, the rejection is moot.

D. Claims 6 and 17

Claims 6 and 17 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Yang et al. (U.S. Patent No. 6,635,580) ("Yang").

However, Claim 6 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. Likewise, Claim 17 depends from Claim 15, which has been amended to incorporate the subject matter of Claim 33, and was not included in this ground of rejection. As such, the rejection is moot.

E. Claim 7 and 18

Claims 7 and 18 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Tamura et al. (U.S. Patent Appl. Pub. No. 2001/0009178) ("Tamura").

However, Claim 7 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. Likewise, Claim 18 depends from Claim 15, which has been amended to

incorporate the subject matter of Claim 33, and was not included in this ground of rejection. As such, the rejection is moot.

F. Claim 8

Claim 8 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Mahawili et al. (U.S. Patent No. 6,007,635) ("Mahawili").

However, Claim 8 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. As such, the rejection is moot.

G. Claims 9 and 20

Claims 9 and 20 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Tamura and Mimura et al. (U.S. Patent No. 7,022,616) ("Mimura").

However, Claim 9 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of rejection. Likewise, Claim 20 depends from Claim 15, which has been amended to incorporate the subject matter of Claim 33, and was not included in this ground of rejection. As such, the rejection is moot.

H. Claims 11 and 22

Claims 11 and 22 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Wang et al. (U.S. Patent Appl. Pub. No. 2002/0075624) ("Wang").

However, Claim 11 depends from Claim 1, which has been amended to incorporate the subject matter of Claim 32, and was not included in this ground of

rejection. Likewise, Claim 22 depends from Claim 15, which has been amended to incorporate the subject matter of Claim 33, and was not included in this ground of rejection. As such, the rejection is moot.

I. Claim 19

Claim 19 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Mahawili.

However, Claim 19 depends from Claim 15, which has been amended to incorporate the subject matter of Claim 33, and was not included in this ground of rejection. As such, the rejection is moot.

J. Claims 32 and 33

Claims 32 and 33 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Yatsuda in view of Chiang and Ramanan and further in view of Gaylord.

The Official Action acknowledges that the combination of Yatsuda, Chiang and Ramanan does not disclose all the features of Claims 32 and 33, and cites Gaylord to allegedly cure these deficiencies (Official Action at page 15, lines 9-21). However, as discussed above, Gaylord fails to cure the above noted deficiencies regarding the combination of Yatsuda, Chiang and Ramanan, with respect to Claims 32 and 33. Accordingly, Applicant respectfully submits that Claims 32 and 33 are patentable over the applied references for at least the same reasons as those discussed above regarding Claims 1 and 15.

Conclusion

For at least the foregoing reasons, Applicant respectfully submits that all pending claims are allowable, and this application is in condition for allowance. Accordingly, Applicant requests a favorable examination and consideration of the instant application. Should Examiner Dhingra wish to discuss this application, Applicant requests that the undersigned be contacted at the number below.

Respectfully submitted,

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